

Ecosystem Considerations in Fisheries Management

Linking Ecosystem Management Goals with Ecosystem Research

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OUTLINE

- **Introduction -**
 - Recent focus on ecosystems and their management
- **Background -**
 - The Alaskan context
- **Proposed Action -**
 - An Ecosystem Document
- **Summary -**
 - The future directions

FOCUS ON ECOSYSTEMS

- **Working Groups/Advisory Panels**
 - ICES/SCOR WG 105
 - ICES WG on Ecosystem Effects of Fishing
 - US NMFS Ecosystem Principles Advisory Panel
 - Scientific Committee for the Conservation of Antarctic Marine Living Resources
- **Research articles, books, reports**
 - Bio-diversity, sustainability, ecosystem management
- **Research Programs**
 - GLOBEC, Habitat research, Long-term monitoring

THE ALASKAN CONTEXT

- **Federally-managed groundfish populations**
- **Relatively conservative exploitation rates combined with productive fish stocks but declining mammal and bird stocks**
- **Pro-active management: ecosystem committee, ecosystem considerations chapter**

IMPROVED ECOSYSTEM ADVICE

- **Ecosystem-oriented Management Goals**
- **Management Tools**
- **Expansion of scientific advice to include broad spectrum of ecosystem research**
 - **Development of Indicators**

ECOSYSTEM-ORIENTED MANAGEMENT GOALS

- **Maintain biodiversity**
- **Maintain and restore habitats of fish and prey**
- **Maintain system sustainability (human consumption and non-extractive uses.)**
- **Maintain the concept that humans are part of the ecosystem**

ECOSYSTEM INDICATORS

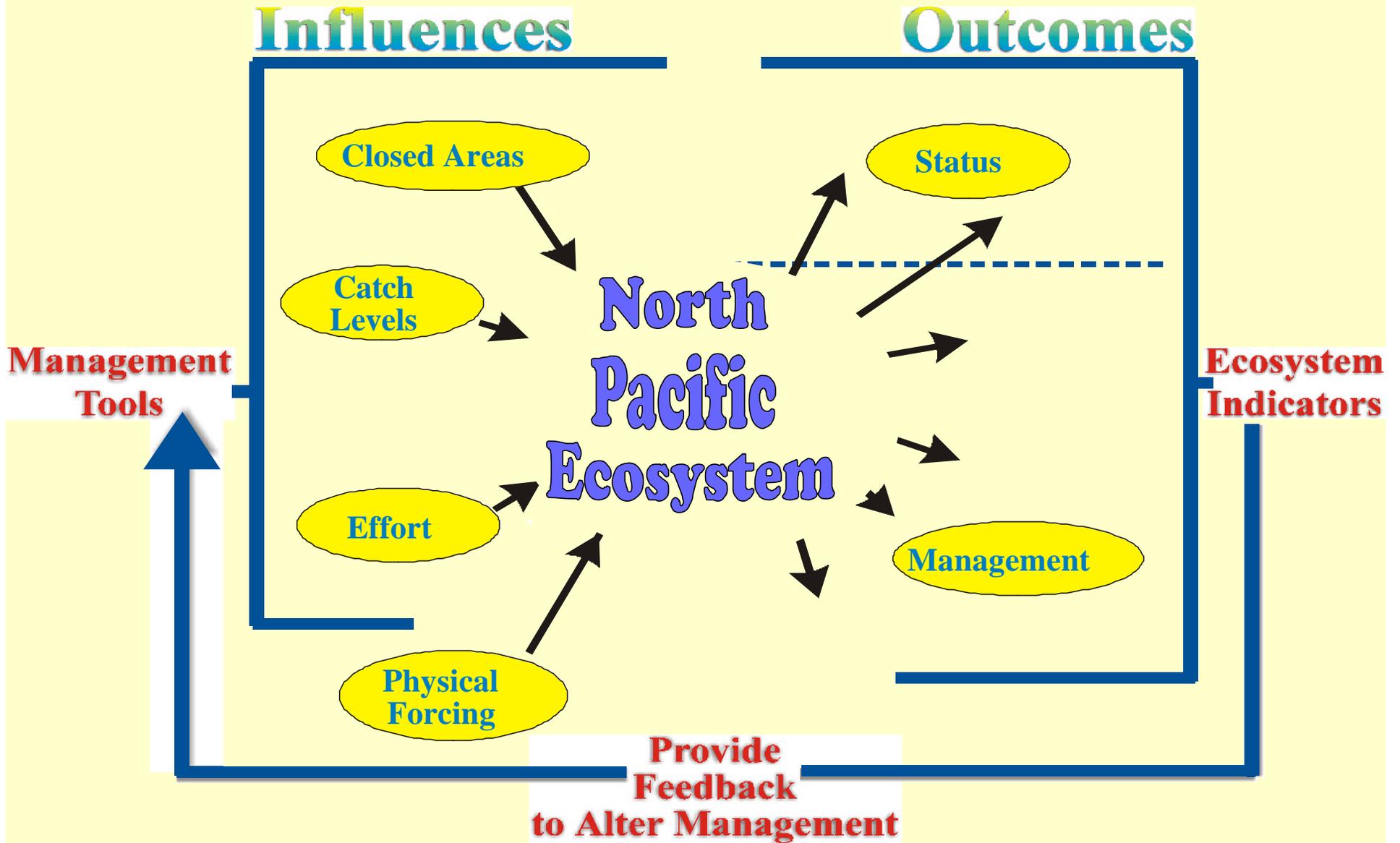
MANAGEMENT

- **Provide early warning of human effects**
- **Track efficacy of previous management efforts**

STATUS

- **Link ecosystem research to traditional fisheries advice**
- **Provide new understanding of ecosystem connections**

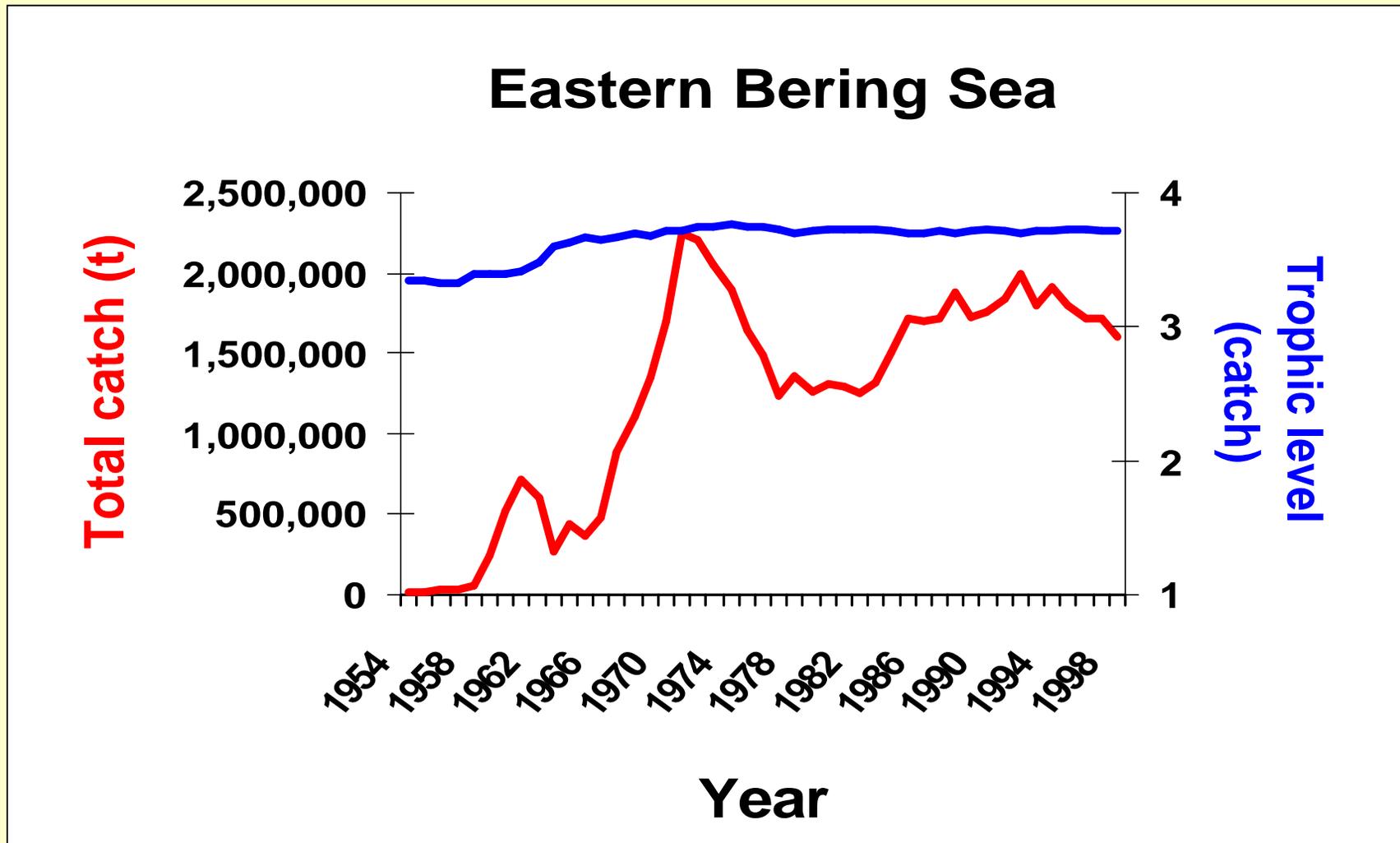
Ecosystem Measures and Influences



MANAGEMENT INDICATORS

- **Bycatch/discard amounts**
- **Area closed to bottom trawling**
- **Trophic level and total amount of catch**
- **Effort levels and controls**

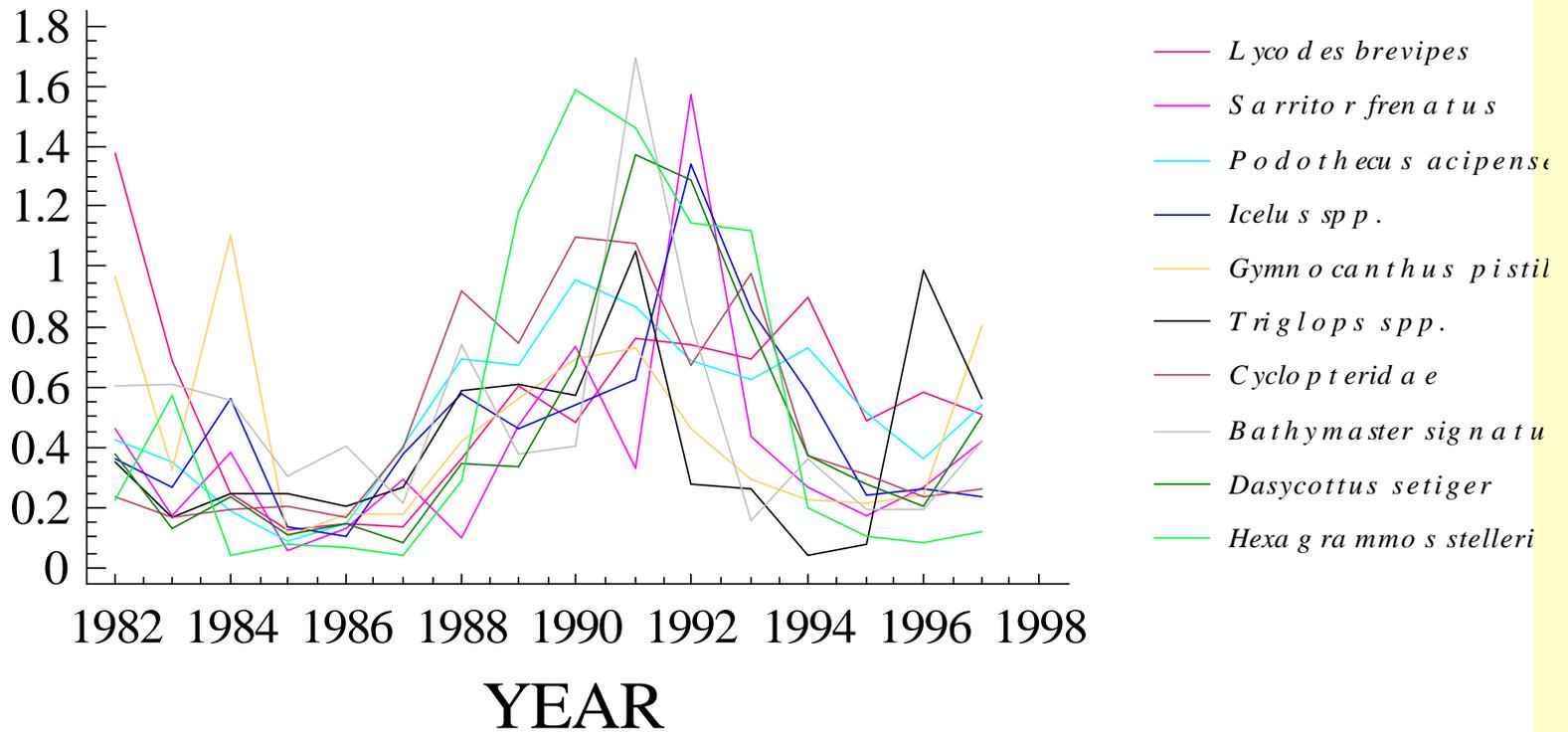
ECOSYSTEM MANAGEMENT



ECOSYSTEM STATUS INDICATORS

- **Status and trend indicators of**
 - **Physical environment** (PDO, ice cover, etc)
 - **Habitat** (contaminants, benthos, sediments)
 - **Living Marine Resources** (phytoplankton, zooplankton, forage fish, invertebrates, non-target fish species, marine mammals, seabirds)
 - **Community or Ecosystem level** (diversity, trophic level, model results)

ECOSYSTEM STATUS



FUTURE PROSPECTS

- **Build and enhance ecosystem advice**
- **Develop more quantitative management objectives**
- **Promote long-term ecosystem monitoring**